Geophysical Research Abstracts
Vol. 21, EGU2019-6193, 2019
EGU General Assembly 2019

43 years of Monitoring Erosion Rates on Shore Platforms at Kaikōura Peninsula, South Island, New Zealand

Wayne Stephenson (1), Bob Kirk (2), and Maree Hemmingsen (3)

(1) University of Otago, Department of Geography, Dunedin, New Zealand (wayne.stephenson@otago.ac.nz), (2) Department of Geography, University of Canterbury, Private Bag 4800, Christchurch, New Zealand (b.kirk@xtra.co.nz), (3) Primary Science Solutions Limited, P.O. Box 79204, Christchurch, New Zealand (maree.hemmingsen@xtra.co.nz)

Using micro-erosion meters (MEM) and traversing micro-erosion meters (TMEM), surface lowering rates of shore platforms on Kaikoura Peninsula, South Island, New Zealand have been measured over a total of 43 years. This record is the longest monitored network of this type. Since 1973, erosion rates have been calculated over two, two year periods 1973-1975, (n=31) and 1993-1996, (n=52) and at decadal scales; 1973-1993 (n=15), 1973-2003 (n= 12), 1973-2016 (n=7), 1993-2003 (n=50), 1993-2008 (n=34), , 1993-2016, (n=18). After 43 years, surface lowering rates remain similar to previously published rates at an average of 0.525 to 1.181 mm/yr. Statistical analysis shows that erosion rates over all measurement periods are derived from the same population. Thus short term rates derived from two years of monitoring remain indicative of decadal rates of erosion. Variations between measurement periods are best explained by the loss of the more rapidly eroding bolt sites. These losses point to the difficulty of maintaining monitoring over longer time scales. In November 2016 a Mw 7.8 earthquake raised the Kaikoura Peninsula approximately 0.8- 1 m, elevating much of the shore platforms above the tide range. This earthquake has reset the MEM record ending this long running erosion monitoring site of shore platform surface lowering. However the MEM network is now being used to monitor post-earthquake response of the uplift shore platforms and new marine terraces.